

REQUEST FOR QUOTATION (THIS IS NOT AN ORDER)			THIS RFQ <input type="checkbox"/> IS <input checked="" type="checkbox"/> IS NOT A SMALL BUSINESS SET-ASIDE		PAGE 1 OF 8 PAGES
1. REQUEST NO. N65540-04-Q-0097	2. DATE ISSUED 04 FEB 04	3. REQUISITION/PURCHASE REQUEST NO. 91110 33394682	4. CERT. FOR NAT. DEF. UNDER BDSA REG. 2 AND/OR DMS REG. 1		RATING
5a. ISSUED BY CONTRACTING OFFICER NSWC CARDEROCK DIVISION			6. DELIVER BY (Date) 04 MAY 14		
5b. FOR INFORMATION CALL (NO COLLECT CALLS)			7. DELIVERY <input checked="" type="checkbox"/> FOB DESTINATION <input type="checkbox"/> OTHER (See Schedule)		
NAME 5001 S. BROAD STREET, CODE 335 PHILADELPHIA, PA 19112-1403 DAVID DENNISON		TELEPHONE NUMBER AREA CODE NUMBER 215 897-1494 FAX: 215 897-7059		9. DESTINATION N65540	
8. TO:			a. NAME OF CONSIGNEE NAVAL BUSINESS CENTER RECEIVING OFFICER, FISC, NSWC CARDEROCK DIVISION		
a. NAME		b. COMPANY		b. STREET ADDRESS 1601 LANGLEY AVENUE BLDG 542 E	
c. STREET ADDRESS			c. CITY PHILA.		
d. CITY		e. STATE	f. ZIP CODE	d. STATE PA	e. ZIP CODE 19112-5051
10. PLEASE FURNISH QUOTATIONS TO THE ISSUING OFFICE IN BLOCK 5A ON OR BEFORE CLOSE OF BUSINESS (Date) 04 FEB 20			IMPORTANT: This is a request for information and quotations furnished are not offers. If you are unable to quote, please so indicate on this form and return it to the address in Block 5A. This request does not commit the Government to pay any costs incurred in the preparation of the submission of this quotation or to contract for supplies or services. Supplies are of domestic origin unless otherwise indicated by quoter. Any representations and/or certifications attached to this Request for Quotations must be completed by the quoter.		

11. SCHEDULE (Include applicable Federal, State and local taxes)					
ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)
0001	REQN. NO. 91110 /33394682 ITEM NAME: SWITCHGEAR, OUTDOOR, PAD MOUNTED SIX WAY, 13.8 KVAC, 60HZ IN ACCORDANCE WITH THE ATTACHED PURCHASE SPECIFICATION		1 EA		
0002	REQN. NO. 91110 /33394683 ITEM NAME: RELEASE FOR MANUFACTURE DOCUMENTATION (SECTION 4.0) OF THE PURCHASE SPECIFICATION		1 EA		
0003	REQN. NO. 91110 /33394684 ITEM NAME: TECHNICAL MANUAL (SECTION 6.2) OF THE PURCHASE SPECIFICATION		3 EA		

12. DISCOUNT FOR PROMPT PAYMENT	a. 10 CALENDAR DAYS (%)	b. 20 CALENDAR DAYS (%)	c. 30 CALENDAR DAYS (%)	d. CALENDAR DAYS	
				NUMBER	PERCENTAGE

NOTE: Additional provisions and representations ☐ are ☐ are not attached

13. NAME AND ADDRESS OF QUOTER			14. SIGNATURE OF PERSON AUTHORIZED TO SIGN QUOTATION		15. DATE OF QUOTATION
a. NAME OF QUOTER					
b. STREET ADDRESS			16. SIGNER		
c. COUNTY			a. NAME (Type or print)		b. TELEPHONE
					AREA CODE
d. CITY	e. STATE	f. ZIP CODE	c. TITLE (Type or print)		NUMBER

CONTINUATION SHEET

DOC. NO. N65540-04-Q-0097

PAGE NO. 2 OF 8

VENDOR:

SECTION F TIME OF DELIVERY

DELIVERIES SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS

ITEM	QUANTITY	DELIVERY REQUIRED
0001	1 EA	(SECTION 8.3) OF SPECIFICATION
0002	1 EA	(SECTION 8.3) OF SPECIFICATION
0003	3 EA	(SECTION 8.3) OF SPECIFICATION

52.247-34 F.O.B. DESTINATION (NOV 1991)

52.213-4 Terms and Conditions--Simplified Acquisitions (Other Than Commercial Items) (JAN 2004)

(a) The Contractor shall comply with the following Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) clauses that are incorporated by reference:

(1) The clauses listed below implement provisions of law or Executive order:

(i) 52.222-3, Convict Labor (June 2003) (E.O. 11755).

(ii) 52.222-21, Prohibition of Segregated Facilities (Feb 1999) (E.O. 11246).

(iii) 52.222-26, Equal Opportunity (Apr 2002) (E.O. 11246).

(iv) 52.225-13, Restrictions on Certain Foreign Purchases (Oct 2003) (E.O.s, proclamations, and statutes administered by the Office of Foreign Assets Control of the Department of the Treasury).

(v) 52.233-3, Protest After Award (Aug 1996) (31 U.S.C. 3553).

(2) Listed below are additional clauses that apply:

(i) 252.204-7003, Control of Government Personnel Work Product (Apr 1992)

(ii) 52.232-1, Payments (Apr 1984).

(iii) 52.232-11, Extras (Apr 1984).

(iv) 52.233-1, Disputes (Jul 2002).

(v) 252.243-7001 Pricing of Contract Modifications (Dec 1991)

(vi) 52.244-6, Subcontracts for Commercial Items (Apr 2003).

(vii) 52.253-1, Computer Generated Forms (Jan 1991).

(b) The Contractor shall comply with the following FAR and DFARS clauses, incorporated by reference, unless the circumstances do not apply:

(1) The clauses listed below implement provisions of law or Executive order:

(i) 52.222-19, Child Labor--Cooperation with Authorities and Remedies (Jan 2004) (E.O. 13126). (Applies to contracts for supplies exceeding the micro-purchase threshold.)

(ii) 52.222-20, Walsh-Healey Public Contracts Act (Dec 1996) (41 U.S.C. 35-45) (Applies to supply contracts over \$10,000 in the United States, Puerto Rico, or the U.S. Virgin Islands).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible

CONTINUATION SHEET

DOC. NO. N65540-04-Q-0097

PAGE NO. 3 OF 8

VENDOR:

Veterans (Dec 2001) (38 U.S.C. 4212) (Applies to contracts of \$25,000 or more).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (June 1998) (29 U.S.C. 793). (Applies to contracts over \$10,000, unless the work is to be performed outside the United States by employees recruited outside the United States.) (For purposes of this clause, United States includes the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.)

(v) 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (Dec 2001) (38 U.S.C. 4212) (Applies to contracts of \$25,000 or more).

(vi) 52.222-41, Service Contract Act of 1965, As Amended (May 1989) (41 U.S.C. 351, et seq.) (Applies to service contracts over \$2,500 that are subject to the Service Contract Act and will be performed in the United States, District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, Johnston Island, Wake Island, or the outer continental shelf lands).

(vii) 52.223-5, Pollution Prevention and Right-to-Know Information (Aug 2003) (E.O. 13148) (Applies to services performed on Federal facilities).

(viii) 252.225-7001, Buy American Act and Balance of Payments Program (Apr 2003) (Applies to all contracts for supplies unless an exception is authorized by DFARS 225.1101(2) (i) through (iv)).

(ix) 252.225-7013, Duty-Free Entry (Apr 2003) (Applies to all contracts for supplies except for those supplies that will not enter the customs territory of the United States).

(x) 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration (Oct 2003). (Applies when the payment will be made by electronic funds transfer (EFT) and the payment office uses the Central Contractor Registration (CCR) database as its source of EFT information.)

(xi) 52.232-34, Payment by Electronic Funds Transfer--Other than Central Contractor Registration (May 1999). (Applies when the payment will be made by EFT and the payment office does not use the CCR database as its source of EFT information.)

(xii) 252.247-7023, Transportation of Supplies by Sea (May 2002) Alternate III (May 2002) (Applies when transporting any supplies by sea under this contract.)

(2) Listed below are additional clauses that may apply:

(i) 52.204-7, Central Contractor Registration (Oct 2003) (Applies to all contracts unless an exception is authorized by FAR 4.1102(a).)

(ii) 252.204-7004, Alternate A (Nov 2003) (Applies if FAR 52.204-7 is applicable.)

(iii) 52.209-6, Protecting the Government's Interest When Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment (July 1995) (Applies to contracts over \$25,000).

(iv) 52.211-5 Material Requirements (Aug 2000) (Applies to contracts for supplies that are not commercial items).

(v) 52.211-17, Delivery of Excess Quantities (Sept 1989) (Applies to fixed-price supplies).

(vi) 252.225-7002, Qualifying Country Sources as Subcontractors (Apr 2003) (Applies if the contract is subject to the DFARS clause 252.225-7001, Buy American Act and Balance of Payments Program (see (b)(1)(viii) above)).

CONTINUATION SHEET

DOC. NO. N65540-04-Q-0097

PAGE NO. 4 OF 8

VENDOR:

(vii) 52.243-1, Changes--Fixed Price (Aug 1987) (Applies to fixed-price contracts for supplies).

(viii) 52.243-1, Changes--Fixed Price (Aug 1987) Alternate I (Apr 1984) (Applies to fixed price contracts for services, other than architect-engineer or other professional services, and no supplies are to be furnished).

(ix) 52.243-1, Changes--Fixed Price (Aug 1987) Alternate II (Apr 1984) (Applies to fixed price contracts for services (other than architect-engineer services, transportation, or research and development) and supplies are to be furnished).

(x) 52.243-1, Changes--Fixed Price (Aug 1987) Alternate V (Apr 1984) (Applies to fixed price contracts for research and development).

(xi) 52.247-29, F.o.b. Origin (Jun 1988) (Applies to supplies if delivery is f.o.b. origin).

(xii) 52.247-34, F.o.b. Destination (Nov 1991) (Applies to supplies if delivery is f.o.b. destination).

(xiii) 52.222-42, Statement of Equivalent Rates for Federal Hires (May 1989) (Applies if the contract amount is expected to be over \$2,500 and the contract is subject to the clause 52.222-41, "Service Contract Act of 1965, As Amended" (see (b) (1) (vi) above)).

In compliance with the Service Contract Act of 1965, as amended, and the regulations of the Secretary of Labor (29 CFR Part 4), this clause identifies the classes of service employees expected to be employed under the contract and states the wages and fringe benefits payable to each if they were employed by the contracting agency subject to the provisions of 5 U.S.C. 5341 or 5332.

This Statement is for Information Only:

It is not a Wage Determination

Employee Class	Monetary Wage--Fringe Benefits
_____	_____
_____	_____
_____	_____
_____	_____

(xiv) 52.246-11 Higher-Level Contract Quality Requirement (Feb 1999) (Applies to contracts when the contracting officer finds it is in the Governments interest to require that higher-level quality standards be maintained and such standards are selected and identified in the clause).

The Contractor shall comply with the higher-level quality standard selected below. [If more than one standard is listed, the offeror shall indicate its selection by checking the appropriate block.]

	Title	Number	Date	Tailoring
*	_____	_____	_____	_____
*	_____	_____	_____	_____
*	_____	_____	_____	_____
*	_____	_____	_____	_____

[Contracting Officer insert the title, number (if any), date, and tailoring (if any) of the higher-level quality standards.]

(c) FAR 52.252-2, Clauses Incorporated by Reference (Feb 1998). This contract incorporates one or more clauses by

CONTINUATION SHEET

DOC. NO. N65540-04-Q-0097

PAGE NO. 5 OF 8

VENDOR:

reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

FAR clauses - <http://www.arnet.gov/far/>

DFARS clauses - <http://www.acq.osd.mil/dp/dars/dfars.html>

(d) Inspection/Acceptance. The Contractor shall tender for acceptance only those items that conform to the requirements of this contract. The Government reserves the right to inspect or test any supplies or services that have been tendered for acceptance. The Government may require repair or replacement of nonconforming supplies or reperformance of nonconforming services at no increase in contract price. The Government must exercise its postacceptance rights--

(1) Within a reasonable period of time after the defect was discovered or should have been discovered; and

(2) Before any substantial change occurs in the condition of the item, unless the change is due to the defect in the item.

(e) Excusable delays. The Contractor shall be liable for default unless nonperformance is caused by an occurrence beyond the reasonable control of the Contractor and without its fault or negligence, such as acts of God or the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, unusually severe weather, and delays of common carriers. The Contractor shall notify the Contracting Officer in writing as soon as it is reasonably possible after the commencement of any excusable delay, setting forth the full particulars in connection therewith, shall remedy such occurrence with all reasonable dispatch, and shall promptly give written notice to the Contracting Officer of the cessation of such occurrence.

(f) Termination for the Government's convenience. The Government reserves the right to terminate this contract, or any part hereof, for its sole convenience. In the event of such termination, the Contractor shall immediately stop all work hereunder and shall immediately cause any and all of its suppliers and subcontractors to cease work. Subject to the terms of this contract, the Contractor shall be paid a percentage of the contract price reflecting the percentage of the work performed prior to the notice of termination, plus reasonable charges that the Contractor can demonstrate to the satisfaction of the Government, using its standard record keeping system, have resulted from the termination. The Contractor shall not be required to comply with the cost accounting standards or contract cost principles for this purpose. This paragraph does not give the Government any right to audit the Contractor's records. The Contractor shall not be paid for any work performed or costs incurred that reasonably could have been avoided.

(g) Termination for cause. The Government may terminate this contract, or any part hereof, for cause in the event of any default by the Contractor, or if the Contractor fails to comply with any contract terms and conditions, or fails to provide the Government, upon request, with adequate assurances of future performance. In the event of termination for cause, the Government shall not be liable to the Contractor for any amount for supplies or services not accepted, and the Contractor shall be liable to the Government for any and all rights and remedies provided by law. If it is determined that the Government improperly terminated this contract for default, such termination shall be deemed a termination for convenience.

(h) Warranty. The Contractor warrants and implies that the

CONTINUATION SHEET

DOC. NO. N65540-04-Q-0097

PAGE NO. 6 OF 8

VENDOR:

items delivered hereunder are merchantable and fit for use for the particular purpose described in this contract.

(End of clause)

52.232-36 Payment by Third Party (May 1999)

(a) General. The Contractor agrees to accept payments due under this contract, through payment by a third party in lieu of payment directly from the Government, in accordance with the terms of this clause. The third party and, if applicable, the particular Governmentwide commercial purchase card to be used are identified elsewhere in this contract.

(b) Contractor payment request. In accordance with those clauses of this contract that authorize the Contractor to submit invoices, contract financing requests, other payment requests, or as provided in other clauses providing for payment to the Contractor, the Contractor shall make such payment requests through a charge to the Government account with the third party, at the time and for the amount due in accordance with the terms of this contract.

(c) Payment. The Contractor and the third party shall agree that payments due under this contract shall be made upon submittal of payment requests to the third party in accordance with the terms and conditions of an agreement between the Contractor, the Contractor's financial agent (if any), and the third party and its agents (if any). No payment shall be due the Contractor until such agreement is made. Payments made or due by the third party under this clause are not payments made by the Government and are not subject to the Prompt Payment Act or any implementation thereof in this contract.

(d) Documentation. Documentation of each charge against the Government's account shall be provided to the Contracting Officer upon request.

(e) Assignment of claims. Notwithstanding any other provision of this contract, if any payment is made under this clause, then no payment under this contract shall be assigned under the provisions of the assignment of claims terms of this contract or the Assignment of Claims Act of 1940, as amended, 31 U.S.C. 3727, 41 U.S.C. 15.

(f) Other payment terms. The other payment terms of this contract shall govern the content and submission of payment requests. If any clause requires information or documents in or with the payment request, that is not provided in the third party agreement referenced in paragraph (c) of this clause, the Contractor shall obtain instructions from the Contracting Officer before submitting such a payment request.

(End of clause)

Your quotation must include the following information:

Price list number and date

or

Cost breakdown by direct labor (list categories, hours and pay rates). In addition to the direct rates, provide the applicable indirect information (G&A), overhead,

CONTINUATION SHEET

DOC. NO. N65540-04-Q-0097

PAGE NO. 7 OF 8

VENDOR:

facilities capital cost of money (FCCM) and profit.

or

Applicable General Services Administration (GSA) contract number.

If unable to quote FOB, Destination, please complete the following:

FOB Point _____

Estimated Shipping Charge _____

Business size:

Large _____ Small _____ Nonprofit _____

Cage Code _____

Tax Identification Number (TIN) _____

DUNNS _____

ELIGIBILITY REQUIREMENTS

All contractors and individuals doing business with the Federal Government must be registered at the Contractor Central Registration Database located at:
<http://ccr.dlsc.dla.mil/>.

ELECTRONIC DISTRIBUTION OF CONTRACT DOCUMENTS

All contract award and contract modification documents will be distributed electronically using the Navy Air Force Interface (NAFI) system. The contractor's copy will be provided in portable document format (pdf) as an attachment to an e-mail that will be sent to the contractor by the NAFI system. A pdf file may be accessed using Adobe Acrobat Reader software. This is a free software that may be downloaded at:

<http://www.adobe.com/products/acrobat/readstep.html>

Provide the following information that will be used to make electronic distribution for any resultant contract:

Name of Point of Contact to Receive Distribution _____

Phone Number for Point of Contact _____

E-Mail Address for Receipt of Distribution _____

USE OF THE GOVERNMENTWIDE COMMERCIAL PURCHASE CARD

Will you accept the Governmentwide Commercial Purchase Card

CONTINUATION SHEET

DOC. NO. N65540-04-Q-0097

PAGE NO. 8 OF 8

VENDOR:

as a method of purchasing supplies and/or services.

☐ Yes

☐ No

Will you accept the Governmentwide Commercial Purchase Card
as a method of payment for your invoice.

☐ Yes

☐ No

DUTY FREE ENTRY

Will any materials being shipped to the Government require a
duty-free entry certificate for foreign supplies.

☐ Yes

☐ No

If yes, please include dollar amount \$ _____

Contractor shall provide a Quotation demonstrating that equipment proposed will comply with the attached specification. Specifically, the contractor shall include information for key items that are required to perform technical evaluation, as listed below:

Paragraph 5.1:

- A.1 – A.11
- B1
- C.1 – C.5
- D.1 - D.2 and D.4 – D.7
- E.6 - E.7
- F.1 – F.3
- H.1 – H.6
- I.1 - I.2
- K.1 - K.4
- M.1 – M.3, M.6, M.10 – M.14
- N.1
- O.1
- R.1

Additional information on other items is welcome, but not essential for technical evaluation. In the absence of exceptions to technical requirements, it will be understood that the vendor intends to fully comply with the Technical Requirements as listed in the Technical Specification.

Additionally, contractor is requested to forward information on the following areas:

- a. Details on SF6 tank preparation, sealing, testing, field history and historical reliability data.
- b. Type of protection relay proposed for use with fault interrupter; including confirmation that relay will not misoperate due to 10 – 12 per unit inrush current when energizing a 10 MVA transformer.

SPECIFICATION NUMBER: TS050-03, REV. -
DATE: 2 February 2004

Purchase Specification
For The
DD(X) IPS Land Based Test Site

13.8KV, 600A
Outdoor Distribution Switchgear

Table Of Contents

1.0 Introduction.....	3
2.0 Scope.....	3
2.1 Equipment and Services to be Provided by the Supplier:	3
2.2 Equipment and Services to be Provided by the Government:.....	3
3.0 Applicable Documents	5
4.0 Release for Manufacture	5
5.0 Technical Requirements	6
5.1 Outdoor Distribution Switchgear	6
5.2 Testing	12
6.0 Technical Data.....	13
6.1 Drawings.....	13
6.2 Technical Manuals.....	13
6.3 Special Tools / Equipment.....	13
6.4 Recommended Maintenance	14
7.0 Inspection and Testing.....	14
8.0 Shipping	14
8.1 Packaging	14
8.2 Marking	14
8.3 Delivery	14

Figures

Figure 1 - Outdoor Distribution Switchgear One Line Diagram & Summary Table.....	4
--	---

1.0 Introduction

This purchase specification and all documents referenced herein contain all of the detailed requirements for (1) 600A, 3 phase, 60 HZ, Dead-Front, Pad Mounted, Six Way, SF6 Insulated, Outdoor Distribution Switchgear nominally rated 13.8KV or higher with switching and protection capabilities as identified in the details section of this specification. The switchgear will be located outdoors at the Naval Surface Warfare Center, Carderock Division, Ship Service Engineering Station (NSWCCD-SSES), Philadelphia Naval Base, Philadelphia, PA.

2.0 Scope

2.1 Equipment and Services to be Provided by the Supplier:

The switchgear (see Figure 1) shall be suitable for industrial installation and shall be constructed in accordance with the best commercial practices. It shall be the Supplier's responsibility to furnish equipment suitable and complete in details for the services intended. The equipment shall be designed, constructed and tested in accordance with applicable regulations of ANSI, IEEE, ASTM, and the National Electrical Code, as specified herein. The Supplier shall be responsible for delivery of each of the following to NSWCCD-SSES in Philadelphia:

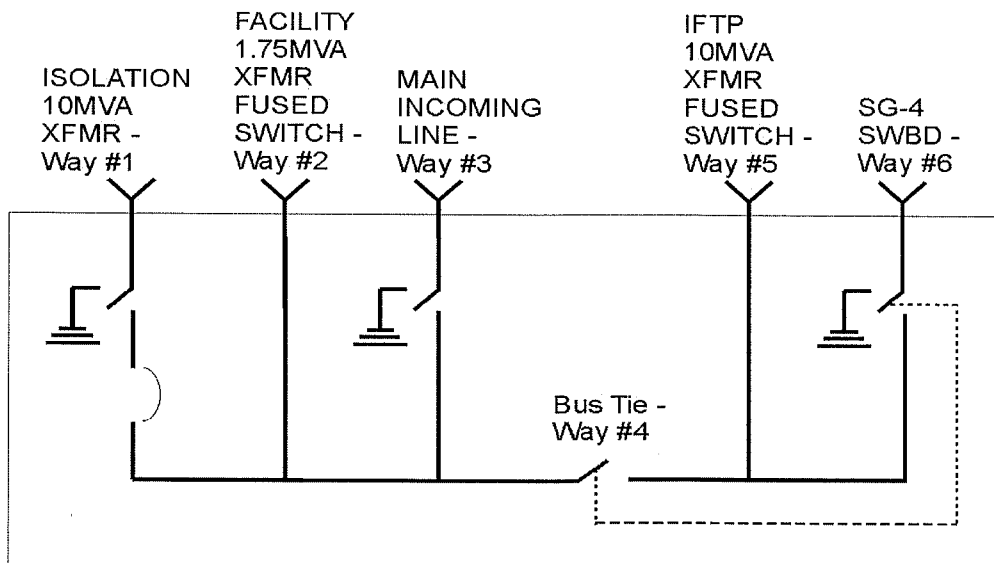
Item	Qty	Description
0001	1	Switchgear, Outdoor, Pad Mounted, Six Way, 13.8 KVAC, 60Hz
0002	1	Drawing Approval Documentation (Section 4.0)
0003	3	Technical Manual (Section 6.2)

The Technical Requirements for this Switchgear are listed in Tabular Format in Section 5.0. The Quotation forwarded in response to this Purchase Specification should address key Technical Requirement line items as specified in the cover letter. All other technical items are required as part of this contract.

2.2 Equipment and Services to be Provided by the Government:

The Government shall install the Switchgear and shall be responsible for the following items:

1. Mounting foundations, structural components and mounting bolts attaching the Supplier-furnished equipment to the site structure, and,
2. Associated cabling.



Way#	Load Description	Summary Requirements
1	Isolation XFMR	600 A Load Interrupter, with grounding capability. 600 A Fault Interrupter.
2	Facility XFMR	600 A Tap
3	Main Incoming Line	600 A Load Interrupter with grounding capability. Remote Motor Operation capability.
4	Bus Tie	600 A Load Interrupter without grounding capability.
5	IFTP XFMR	600 A Tap
6	SG-4 SWBD	600 A Load Interrupter with grounding capability

NOTES:

1. All cable connections are in rear of unit.
2. Switching operations are carried out at front or front top of unit.
3. Unit has dead front design.
4. Diagram shows physical representation of switch positions. For example, Isolation XFMR Switch with Vacuum Interrupter are in the left most position (way 1 position) when looking at front of unit. Position 6 for SG-4 SWBD is in the far right position (way 6 position) when looking at front of unit.
5. Bus Tie Switch and SG-4 Switch shall be key interlocked to prevent closure of both switches at the same time.
6. See Section 5 for additional technical requirements.
7. The 10MVA Isolation Transformer has its 13.2KV delta configured winding connected to the Outdoor Distribution Switchgear and its 13.8KV wye configured winding connected to supply two different Government provided Switchboards. Supplier to verify the vacuum interrupter will not cause transient voltage issues when isolating the 10MVA Isolation Transformer. Distribution system on secondary side (wye side) of transformer is high resistance grounded.

Figure 1 – Outdoor Distribution Switchgear One Line Diagram & Summary Table

3.0 Applicable Documents

- NFPA-70, National Electrical Code, 2002 - Article 490
- ANSI C37.72-1987, Manually Operated, Dead Front Pad Mounted Switchgear with Load Interrupting Switches and Separable Connectors for Alternating Current Systems
- IEEE 386-1995, Standard for Separable Insulated Connector Systems for Power Distribution Systems above 600V
- ASTM D2472-2000, Standard Specification for Sulfur Hexafluoride
- ANSI C57.12.28-1999, Pad Mounted Equipment - Enclosure Integrity

4.0 Drawing Approval

The Supplier shall submit the following documents to the Government, for approval, prior to obtaining Drawing Approval:

- Final Outline, Detail, and Electrical Drawings (Section 6.1)
- Switchgear – Transformer Coordination analysis.
- List of Special Tools / Equipment that will be necessary to put equipment in service

5.0 Technical Requirements

5.1 Outdoor Distribution Switchgear

A. Minimum Integrated Electrical Ratings (includes switches, busses, vacuum interrupters, and bushings):	<ol style="list-style-type: none"> 1. All switches and interrupters shall be rated 600A continuous and have full load break and full load make capability. 2. All switches and interrupters are rated for 3 phase, ganged operation. 3. Equipment shall be designed for 60Hz operation. 4. Equipment will be utilized on a 13.8KV nominal rated system. Equipment shall be rated for 15.5KV minimum phase to phase and phase to ground. 5. Equipment shall have a minimum 95KV BIL rating. 6. The switches, busses, interrupters, bushings, etc. shall be rated to carry 25,000A symmetrical RMS and 40,000A asymmetrical RMS fault current for at least 10 cycles. 7. The switches, busses, fault interrupters, bushings, etc. shall safely withstand the affects of closing into, and carrying rated fault currents. 8. The switches, busses, interrupters, bushings, etc. shall be capable of thermally withstanding 25,000A symmetrical RMS fault current for at least 1 second. 9. The interrupter shall be capable of making and interrupting all currents up to the maximum short circuit rating of 40,000A asymmetrical RMS at maximum rated voltage. 10. Open gaps of the switches shall be sized to allow cable testing thru the back of the elbow. 11. Open gaps of switches and fault interrupters shall be sized to provide reliable isolation from equipment out of service and between power sources that could be out of phase from one another.
B. Harmonic Currents:	<ol style="list-style-type: none"> 1. In addition to carrying sinusoidal, 60Hz load current; the switchgear shall be capable of supporting harmonic current profiles without misoperation. The worst case expected harmonic load currents are as specified: 5th = .2152pu, 7th = .0734, 11th = .0612pu, 13th = .0389pu, 17th = .0259 pu, 19th = .0209pu, 23rd = .0101pu, 25th = .0094pu. Note: 1pu = 437 A.
C. SF6 Gas / Tank:	<ol style="list-style-type: none"> 1. A welded stainless steel switch tank of at least 7 gauge thickness shall be provided. 2. Tank shall be filled with SF6 gas conforming to ASTM D 2472 prior to shipment. 3. Switchgear shall be capable of withstanding low or

	<p>loss of SF6 pressure at expected operating temperatures.</p> <ol style="list-style-type: none"> 4. An SF6 fill valve and pressure gage shall be provided in the switching compartment area. 5. An SF6 low pressure alarm switch with auxiliary contacts (SPDT) rated for 120VAC / 125VDC shall be provided for remote alarm capability.
D. Operating Mechanisms:	<ol style="list-style-type: none"> 1. All operation shafts shall be located on the opposite side of gear from where the 13.8KV power bushings are located so that routine operations are not performed in close proximity to 13.8KV elbows and cables. 2. Load interrupter switches and fault interrupters shall be operated by means of a quick make, quick break mechanism. 3. The manual handle shall charge the operating mechanism for opening, closing, and grounding of the switches and fault interrupters. The charging mechanism shall provide switch and interrupter contacts with the required operating speed which is independent of operator handle speed. 4. Operating mechanisms shall be equipped with an operation selector to prevent inadvertent operation from the closed position directly to the grounded position, or from the grounded position directly to the closed position. The operation selector shall require physical movement to the proper position to permit the next operation. 5. Operation shafts shall be padlockable in any position. 6. The operation selector shall be padlockable to prevent operation to the grounded position. 7. The operating mechanism shall indicate switch position which shall be clearly visible from the normal operating position.
E. Indicators:	<ol style="list-style-type: none"> 1. All indicators shall be located on the opposite side of gear from where the 13.8KV power bushings are located so that routine operations are not performed in close proximity to 13.8KV elbows and cables. 2. Each load interrupter switch shall have a viewing window to see the position of the switch contacts (open, closed, grounded). Note: The bus tie switch shall not have a grounding position. 3. The fault interrupter shall have an indicator showing the position of its contacts. 4. The fault interrupter shall come with a load interrupter switch which shall have a viewing window to see the

SPECIFICATION NUMBER: TS050-03, REV. -
DATE: 2 February 2004

	<p>position of its switch contacts (open, closed, grounded).</p> <ol style="list-style-type: none"> 5. A cover shall be provided for each viewing window to suppress any switching related arcs. 6. Voltage indication with provisions for low voltage phasing for each load interrupter switch and fault interrupter shall be provided. This feature shall include a display to indicate presence of voltage. Note: These provisions are not required for the Switchgear Ways that only have Cable Tap connections. Control power for the test feature can be self derived or customer provided. 7. All load switches and fault interrupters shall have an auxiliary switch available (120VAC / VDC, SPDT) for remote indication of their main contact position.
F. Installation Location/ Enclosure Type:	<ol style="list-style-type: none"> 1. Outdoor (assuming humidity conditions between 0 % and 100 %), NEMA 3R. 2. Pad mounted, non walk-in enclosure for installation on a concrete pad. 3. Enclosure shall provide clear access to bushings for cable terminations. Enclosure may be detachable from the switchgear to provide required access to termination area. 4. Lifting eyes shall be provided. 5. The enclosure shall be constructed of 14 gauge minimum thickness sheet steel. 6. Enclosure surface shall be properly prepared and shall be provided with an ANSI 61 light gray outdoor paint finish having a minimum thickness of 3 mils. Provide description of preparation and painting process for buyer review. 7. The enclosure shall be padlockable. 8. Compartment doors shall have a positive means of latching in the open position.
G. Identification:	<ol style="list-style-type: none"> 1. The switchgear shall have an equipment rating nameplate installed in accordance with the referenced standards. 2. Each switchgear way shall have a white lamicoid (white background) with black core (black letters) indicating the Way # and Load Description as listed in the Figure 1 Summary Table.
H. 15KV Cable Entry/ Terminations:	<ol style="list-style-type: none"> 1. Cables will enter bottom rear of enclosure. 2. At least 25" of depth shall be provided in the cable entry compartment. 3. 600A bushings shall be provided for connecting IEEE 386 insulated connectors at all terminations.

	<ol style="list-style-type: none"> 4. Bushings shall have a centerline height of approximately 40" above the base of the switchgear. This dimension will satisfy minimum cable entry bending requirements. If required, a base spacer under the standard switchgear base may be added to accommodate this height dimension. 5. Sufficient termination space and bushing area strength shall be provided to accommodate connection of up to two 15KV, shielded 500MCM Copper, EPR insulated, PVC or hypalon jacketed cables per phase at each bushing using IEEE 386 connectors. 6. Terminations shall be rated for cable operation at 90 degrees C minimum.
I. High Voltage Bus:	<ol style="list-style-type: none"> 1. Busses shall be copper. The copper shall be silver plated or treated in another customer approved means in areas where internal or external electrical connections are made. 2. The Busses shall be designed to withstand the maximum short circuit forces based on the rating of the switchgear.
J. Ground Bus:	<ol style="list-style-type: none"> 1. Ground bus or ground pad shall be provided which is suitable to accommodate up to two ground cables for each Switch Way. 2. Ground bus or ground pad shall accommodate ½" Nema compression lugs for 2/0 thru 500MCM copper. 3. The ground bus and its connection to the switchgear shall have a short circuit rating equal to the switchgear.
K. Interlocking:	<ol style="list-style-type: none"> 1. Way #4 (Bus Tie) and Way #6 (SG-4 Swbd) shall be key interlocked to prevent these two load break switches from being closed simultaneously. 2. Each interlocked load break switch position shall have a non-removable lock. Removable padlocks are not acceptable for interlocking load break switches. 3. A key shall be provided for the switchgear that will fit into and operate Way #4 and Way #6 load break switch locks. Each switch lock will retain the key until after the switch is opened and the key is returned to the non-operating position. With the switch open and the lock in the non-operating position, the key can be removed. The key can then be placed in the other switch lock, the switch lock could be operated and then this would allow this switch to be closed. This design allows only Way #4 or Way #6 to be closed at any given time. Four sets of interlock keys shall be provided.

	4. Local Warning Placards shall be installed adjacent to Way 4 and Way 6 to alert the operator not to attempt to close Way 4 if Way 6 is closed and vice versa.
L. Main Incoming Line:	1. The main incoming line switch way shall be provided with a motor operator that can be operated remotely. Customer provided 120vac will be made available to power the battery system that comes with the motor operator. The battery system provided shall also be designed to provide for other reliable switchgear power requirements as specified herein. The motor operator shall have the capability of being moved to another switch position in the future if desired.
M. Vacuum Fault Interrupter/ Over Current Protection:	<ol style="list-style-type: none"> 1. 600A capability with non-fused (resettable) over current protection in each of the (3) phases is required. 2. Residual ground over current protection capability shall also be provided. 3. The over current device shall be field programmable via a personal computer. It shall be possible to select time and instantaneous over current trip functions or time only for the over current protection provided. 4. Programming cable and any other interface hardware for over current device shall be provided. 5. The over current device shall send a trip signal to the vacuum interrupter if over current settings have been exceeded. 6. Power and sensing for the over current device and resultant tripping of the vacuum interrupter shall be supplied from the integral current transformers. 7. The vacuum interrupter and its protective circuits shall be provided with provision to trip the vacuum interrupter from a reliable battery power source provided with the switchgear. 8. The vacuum interrupter shall be field resettable after a trip. 9. The vacuum interrupter shall have a minimum clearing time of 3 cycles from fault initiation to fault clearing. 10. The vacuum interrupter way shall have (3) wye connected current transformers and a transformer differential relay with manual reset lockout provided that can be utilized with (6) remote Government provided current transformers which will provide differential protection to the 10 MVA isolation transformer. The transformer differential relay and lockout relay should be located in the switchgear low voltage compartment. These items shall be internally

SPECIFICATION NUMBER: TS050-03, REV. -
DATE: 2 February 2004

	<p>wired as part of the 10 MVA isolation transformer current differential protection package which trips the vacuum interrupter.</p> <p>11. The required terminal block space shall be provided for connecting the six remote Government provided 10 MVA isolation transformer differential CTs in the low voltage compartment. Six Government provided CTs will be utilized because there will be two output breakers with transformer differential CTs on the 13.8 KV (wye) side winding of the 10 MVA isolation transformer. Each breaker will utilize 1 CT on each phase as part of the transformer differential protection. Note: Only one output breaker will be closed at a time.</p>
N. Main Incoming Line Side PT's & CT's	<p>1. (3) CT'S and (2) fused open delta PT's shall be provided for metering as described below.</p>
O. Line Side Metering:	<p>1. A Multifunction Power Meter will be provided by the Government to interface with the voltage and current signals from the Switchgear Utility Power interface (Way 3). The Power Meter will be a Cutler Hammer 1QDP4130. PTs shall be fused on the primary and secondary. CTs shall have a terminal board with shorting capability. PTs shall provide a 3 phase, 120 V secondary and have 1 leg referenced to ground. CTs shall have a 5 A secondary.</p>
P. Low Voltage Wiring:	<p>1. Minimum 90 degrees C, 600V insulated type SIS, with copper conductor shall be provided.</p> <p>2. A separate compartment(s) shall be provided for all Government low voltage wiring interfaces which would include interfaces such as: remote operation of switch motor for main incoming line, transformer differential CT's for Way #1, SF6 low pressure alarm, metering alarms, remote tripping of the vacuum interrupter, remote indication of load switch and fault interrupter main contact position, Government provided auxiliary power.</p> <p>3. Space provision shall be provided for future customer installation of the Cutler Hammer Power Meter following delivery of the switchgear.</p> <p>4. Provision shall be provided that allows low voltage circuits to be supplied from both below the low voltage wiring compartment as well as from the lower side of the wiring compartment. The lower side wiring option will allow cable entry from an above ground route if desired.</p>

Q. Compartment Space Heater (if reqd):	<ol style="list-style-type: none"> 1. Space heaters with thermostat control shall be provided to prevent condensation in any compartments that will be negatively impacted by moisture. 2. If heaters are required, heater power can be derived from a Government provided ungrounded 120 VAC source. The Government would provide a 120 VAC source that could be used to power the motor operator circuit as well as the heaters. The Supplier is required to provide current limiting fuses downstream of the Government provided 120 VAC power source connection to isolate the motor operator power from the heater power in case of a load fault.
R. Maximum Dimensions:	<ol style="list-style-type: none"> 1. 126" wide x 80" high x 80" deep

5.2 Testing

A. Dielectric:	Rated power frequency and DC withstand dielectric tests shall be conducted in accordance with ANSI C37.72 on the switchgear provided. Applicable dielectric tests shall also be provided for the CT's, PT's, and low voltage wiring.
B. Operation:	The switchgear components shall be functionally tested to verify proper operation. This includes but is not limited to opening and closing all switches and interrupters, verifying all indicators, interlocks, as well as protective and operating circuits are working properly. Tests shall be conducted in accordance with ANSI C37.72.
C. Leak Test:	Sealed tanks shall be tested to insure that no leaks are present that will impair operation of the equipment over its operating life.
D. Metering including CT's and PT's	Metering related components shall be tested to verify proper operation and calibration. Calibration certificates for any seller furnished instrumentation shall be provided with switchgear.
E. Contact Resistances:	Bus bar joints and contact resistances shall be tested with a digital low resistance ohmmeter or equal to verify integrity.
F. Design Tests:	Shall be performed as necessary to verify the switch meets or exceeds this specification and as outlined in ANSI C37.72.

6.0 Technical Data

6.1 Drawings

Final Outline, Detail, and Electrical Drawings are required to include the following information:

- Mounting dimensions, rigging features, space limitations, location of center of gravity, switchgear weight with and without enclosure if enclosure is removable from remaining part of switchgear for installation.
- Customer interface locations, electrical schematics, wiring diagrams, one line diagrams.
- Nameplate data.
- Time vs current coordination plot for vacuum interrupter protection of 10MVA Transformer. The Supplier shall verify, using time-current characteristic curves for the over current device that the transformer magnetizing current and duration does not damage any part of the switchgear or cause the interrupter to trip during energization of the 10 MVA transformer. Specific transformer inrush data to be provided by the Government during detailed design.
- CT requirements for remote Government provided isolation transformer differential CTs. The Supplier shall provide documentation showing requirements for the remote Government provided current transformers which will provide differential protection to the 10 MVA isolation transformer to insure proper system operation. The remote Government differential CTs may be located up to 250' from the switchgear and will be interconnected to the CT's using #10AWG wiring.

The drawings shall be included in the Technical Manual (6.2). The Government will also approve the Suppliers Drawings to obtain a release for manufacture.

6.2 Technical Manuals

Three sets of technical manuals shall be forwarded not later than the delivery date of the equipment. Technical manuals shall contain required technical data including: Drawings (6.1), Special Tools / Equipment (6.3), Recommended Maintenance (6.4), Certified Test Report (5.2), instruction manual for overcurrent device and differential relay and any other technical information required to install, operate, or maintain the switchgear.

6.3 Special Tools / Equipment

A list of special tools / equipment required to put transformer in service shall be provided for Release to Manufacture and shall be included in the Technical Manual. Any programming software or interface equipment required for programming protection relays shall be provided.

6.4 Recommended Maintenance

Recommendations shall be provided on the maintenance to be performed and the frequency of maintenance actions for the equipment specified in this document. Also a recommended spare parts list with pricing shall be included with the maintenance

recommendations. This information shall be provided in the Technical Manual not later than the delivery date of the equipment.

7.0 Inspection and Testing

Testing of the equipment shall be performed by the Supplier as specified in Section 5.2. The Government reserves the right to witness Supplier testing and to perform equipment inspections where such inspections are deemed necessary to assure supplies and services conform to the prescribed requirements.

8.0 Shipping

8.1 Packaging

Equipment shall be packed for shipping in a manner which will ensure acceptance and safe delivery at destination. Supplier is responsible for damage during shipment.

8.2 Marking

Each package shall be marked with the Contract Number, Contract Item Number and Purchase Specification Number TS050-03.

8.3 Delivery

All equipment and technical data specified in this document shall be delivered to NSWCCD-SSES in accordance with the following schedule:

- Item 0001: Within 15 weeks after contract award or within 10 weeks after Drawing Approval, whichever is later.
- Item 0002: Within 3 weeks after contract award.
Note: NSWC shall be given 2 weeks to review and provide Drawing Approval
- Item 0003: Within 15 weeks after contract award

All deliverables shall be forwarded to the address given below:

Commander
Naval Surface Warfare Center Carderock Division
Naval Business Center Bldg 542
Philadelphia, PA 19112-5083
Attn: Mr. Ed Harvey, Code 934